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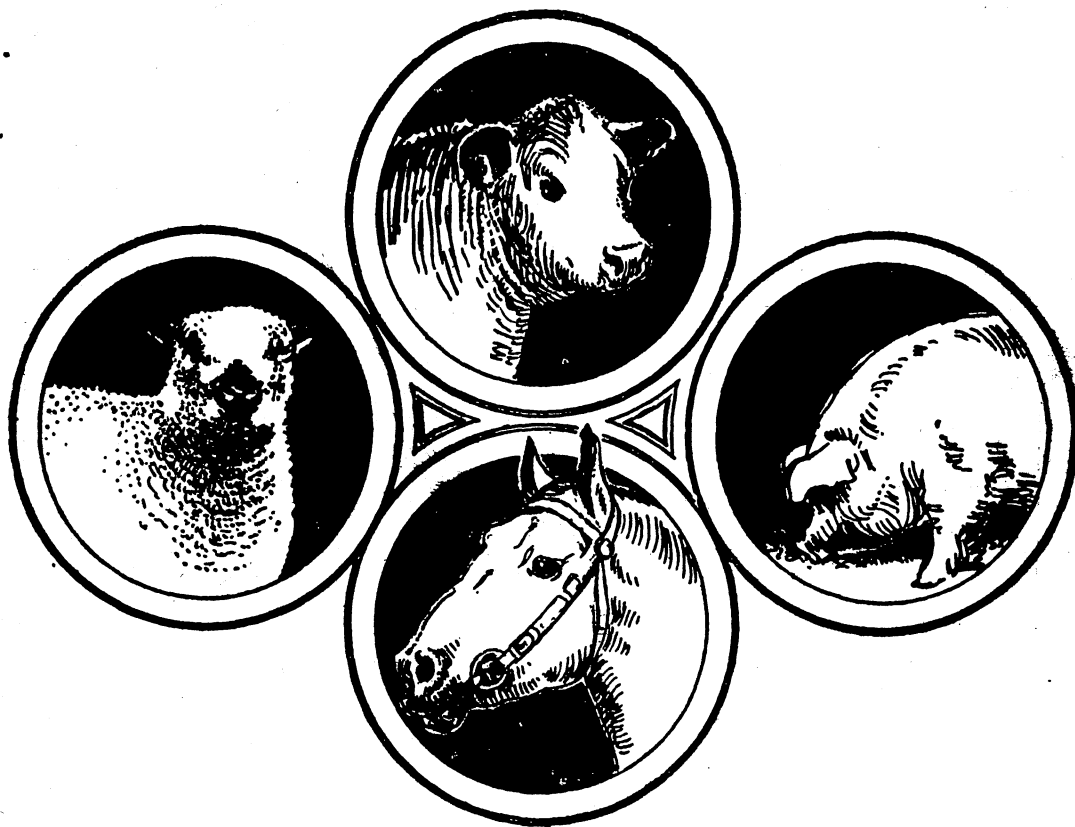
# *The* EXTENSION ANIMAL HUSBANDMAN

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U. S. Department of Agriculture



UNITED STATES DEPARTMENT  
OF AGRICULTURE  
WASHINGTON,  
D.C.

Serial No. 7

September, 1927

### THE COW

The Cow is too well known, I fear,  
To need an introduction here.  
If She should vanish from earth's face  
It would be hard to fill her place;  
For with the Cow would disappear  
So much that every one holds Dear.  
Oh, think of all the Boots and Shoes,  
Milk Punches, Gladstone Bags and Stews,  
And things too numerous to count,  
Of which, my child, she is the Fount.  
Let's hope, at least, the Fount may last  
Until our Generation's past.

—Oliver Herford

What a fountain of blessings is the cow! She is the mother of beef, the source of butter, the original cause of cheese, to say nothing of shoe-horns, hair-combs and upper leather. A gentle, amiable, ever-yielding creature, who has no joy in her family affairs which she does not share with man. We rob her of her children that we may rob her of her milk, and we only care for her when the robbing may be perpetuated.

—Dr. Frank Crane

All communications in regard to this publication, which is issued quarterly, should be addressed to:

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Washington, D. C.

UNITED STATES DEPARTMENT OF AGRICULTURE

Washington, D. C.

THE EXTENSION ANIMAL HUSBANDMAN

Issued by the Bureau of Animal Industry and the  
Office of Cooperative Extension Work Cooperating.

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Some one dubbed our last issue the "Noah's Ark" number -- the reason is evident if the references to the two frogs, the two cats, the two jackasses, the two boys as well as to the various sheep, pigs, horses, etc., are noted. At any rate we received several very favorable comments on it.

This is a beef cattle issue as will be seen by scanning its contents. It is our purpose to continue these special feature numbers for a period. For example, the next one will be devoted largely to swine production activities and later, it is planned to produce numbers emphasizing meats, extension methods, 4-H club work and other subjects of major importance to the group.

While we have had splendid support from the State workers in supplying special articles for use in these pages there are a number of States that have not been represented in this way. May we not have contributions from them?

Soon annual report preparation time will be here. Allow us to urge that all workers take full advantage of the opportunity to include detailed stories of outstanding activities in the narrative sections of their reports. It is to such sources we look for material suitable for use in this publication as well as for general publicity purposes. This is important, so please don't overlook it.

The annual meeting of the American Society of Animal Production will be held as usual at Chicago beginning on Friday following Thanksgiving Day. Gerlaugh and McDonald are preparing a splendid program for the extension section. Let's give them a real crowd.

---C. D. L.

THE BEEF CATTLE SITUATION  
and  
RESEARCH IN BEEF PRODUCTION

By W. H. Black

In Charge, Beef Cattle Investigations,  
Bureau of Animal Industry,  
U. S. Department of Agriculture.

**THE PRESENT SITUATION:** The feeling among those engaged in beef production, whether it be the cattle breeder, feeder, or dealer seems to be optimistic. From 1920 and up to eighteen to twenty-four months ago, beef cattle men, generally speaking, lost money year after year, but conditions have been gradually changing the past two years, and the majority have realized a small profit from their efforts.

Statistics will show that there has been a decline in numbers of beef cattle in late years. The reduction in numbers, however, seems to be in aged steers rather than breeding herds. There has been no marked decline in numbers of cattle slaughtered during the last eighteen months. However, in pounds of beef there has been an appreciable falling off. This situation indicates that breeding herds are being maintained in a fairly good condition, as receipts of slaughter cattle have been comparatively large and made up primarily of light weight animals.

The bulk of cattle slaughtered last year averaged around 1,000 pounds, whereas so far it appears that 900 pounds will not be far off for an average figure for 1927.

Around July 1, 1926, the price of fat steers ranged from \$8 to \$10.50 per hundredweight as compared to \$8.25 to \$14.25 for the same time this year. During the first week in July, 1927, heavy cattle in Chicago reached \$14.40. These figures seem to bear out the belief that there is somewhat of a shortage of heavy cattle, but above all, they are indicative of fairly good conditions for the beef man for the present and immediate future at least. While prices of purebred beef cattle are far from those reached some ten years ago, sales during the past two years show rather conclusively that there has been a very gradual improvement in values of breeding cattle.

An improvement in the purebred beef cattle business is almost certain to follow an upward trend in commercial beef cattle production. Producers of feeder cattle buy good bulls when their finances permit. As an illustration, many range producers of feeder cattle buy the best purebred bulls available when they are making money.

On the other hand, when their cattle sales do not show a profit above cost of production, the producer keeps the same bulls a while longer or exchanges bulls with neighbors. Good prices for feeder and slaughter cattle stimulate values for purebred cattle. The two types of beef production are more or less inseparable, each being dependent upon the other.

As time goes on with the human population increasing and large ranges decreasing, it will become necessary to make gradual adjustments in methods of production. Greater ability in buying and selling cattle, and a more complete knowledge of feeds and feeding will be required of the successful cattle feeder and producer. To supply our country's needs in the future it will be necessary to produce more pounds of beef on less acres of ground. This may be accomplished either by the use of improved pastures or by the feeding of greater amounts of grain and other concentrates and by a greater use of well bred beef animals.

RESEARCH IN BEEF PRODUCTION: Experiments along beef production lines are carefully planned and developed by the U. S. Department of Agriculture and the State experiment stations for the purpose of obtaining information that will guide beef producers in the direction of the most economical methods or practices in beef production. Some of the methods used twenty years ago, and possibly only ten, which were satisfactory from most any viewpoint, are useless today. As an illustration of this, when corn was 20 to 30 cents per bushel, cattle could usually be fattened at a profit on a ration of corn almost exclusively. In later years, when corn reached prices ranging from 75¢ to \$1.50 per bushel, it was found necessary to replace corn with other feeds such as the protein meals, silage and various dry roughages.

It is intended that all beef cattle projects in which the Department is involved be regional or national in character. Our present program includes experiments in all of the distinct beef production areas - the western and southwestern range areas - the Corn Belt - the Appalachian region and the Cotton Belt.

#### Range Investigations.

Previous to 1920 very little range research had been undertaken either by the States or the Department. Most of the experimental work was confined to feed lot tests. Producers of feeder cattle in the range areas suffered enormous losses during a few years following the World War, and it seemed highly important that some information be obtained that would enable the ranchman to modify his methods of production so that feeder cattle could be produced more economically.

Range studies on methods and costs of beef production have been carried on in cooperation with the State agricultural experiment stations in Texas and Colorado for the period from 1920 to 1925. Reports have been issued from time to time in which ranches are analyzed individually. It has been possible to determine the factors which are favorable to low costs and also those unfavorable, on the various ranches. In these studies detailed records have been kept on approximately 40 ranches each year in Colorado and north central Texas. Similar range studies but more general in character were made in the Northern Great Plains Area (Wyoming, Montana and the Dakotas) in the Southwest (New Mexico, Arizona and Western Texas) and in Utah during the year 1926. Reports of the work in the Northwest and Southwest areas are now in the hands of the printer and should be available at an early date. The Utah Agricultural Experiment Station is preparing the data obtained on Utah ranches for publication. As a result of these general surveys, routes have been established in both the Northwest and Southwest areas referred to, and detailed range livestock studies will be made for a period of at least three years.

Three years of experimental work were completed last year at the Tucumcari, N. Mex., and Big Spring, Tex., field stations of the U. S. Bureau of Plant Industry. In these experiments range calves were fattened on dry land crops. In many sections of the Southwest, considerable quantities of the grain sorghums are produced, frequently in localities several miles from railroads. Our investigations in feeding dry land crops show that under certain conditions it may be advisable to market these crops through livestock. The data have been prepared for publication as technical bulletins of the Department and as experiment station bulletins of the States of Texas and New Mexico, and should be available at an early date.

Range experiments of a more technical character are being conducted at the U. S. Range Livestock Experiment Station at Miles City, Mont., the North Montana Sub-Station, Havre, Mont., the Ardmore Field Station, Ardmore, S. Dak., and on the King Ranch, Kingsville, Tex. At the Montana stations such factors as relative values of locally grown feeds in both wintering and fattening rations, for various classes of beef cattle, are being determined. Factors affecting the range itself, such as rate of stocking and deferred and rotation grazing are given consideration in the research programs at Ardmore and Miles City.

In the Gulf Coast country the Brahman cattle have demonstrated their ability as an economical producer of grass beef, but very little is known of their qualities as feed lot animals. The Department in cooperation with the Texas Agricultural Experiment Station and the King Ranch is conducting experiments at Kingsville, Tex., to determine the merits of Shorthorn-Brahman and Hereford-Brahman crosses as producers of grain finished beef.

### Corn Belt Investigations.

In the corn belt area, the raising of cattle for beef purposes is perhaps a much greater problem than in other beef areas largely because of the higher values and the suitability of land for the production of grain and hay crops. It is generally believed that if cattle are raised profitably on high priced land that the calves should be developed rapidly and sold under two years of age. The Department in cooperation with the University of Missouri and the Sni-a-Bar Farms are conducting experiments to determine the relative values of various methods of handling calves, while nursing their dams. One group of calves is to run with their dams on pasture and receive no feed in addition to the milk and pasture; another group is to run with their dams and receive a grain mixture in addition. A third group is given a separate pasture from dams, receives a grain mixture and is allowed to nurse twice a day.

### Investigations in the Appalachian Region.

In the Appalachian region the handling of cattle on grass is perhaps one of the foremost agricultural enterprises. Three and four year old steers still make up the bulk of cattle marketed for beef. Our experimental work for 1914 to 1922 in this region has shown the most economical methods of wintering all classes of beef cattle. At the present time the Department in cooperation with the Agricultural Experiment Stations of Virginia and West Virginia is conducting experiments to determine the advisability of improving the quality of beef by the feeding of a supplement of grain on grass, and the effect of this system on the net returns of cattle feeding.

In the New England States the beef industry is decidedly undeveloped. The dual purpose cattle industry promises to fill a need of many of the farms. A dual purpose herd of cattle has been established at the U. S. Morgan Horse Farm, Middlebury, Vt. Detailed records are being kept and the advisability of maintaining a herd and producing both milk and beef will be determined.

### Investigations in the Cotton Belt.

The matter of using the cut-over pine lands of the South is of considerable importance in many sections. Experiments in raising cattle at McNeill, Miss., have shown that considerable income can be obtained in using these lands for beef production. The effect of burning and non-burning the pastures upon the grasses, upon reforestation and upon the gains made by the cattle also is being determined at this station.

Beef production experiments consisting of growth studies of Hereford and Brahman calves and the fattening of steers and heifers on locally-produced feeds including rice by-products have been under



way for several years at the Iberia Livestock Experiment Farm, Jeanerette, La.

The value of good beef blood in beef production is being determined in investigations conducted at the A. & M. College, Jonesboro, Ark., in cooperation with the Arkansas Agricultural Experiment Station. In this experiment the production of pure-breds, three-quarter bloods, half bloods, and scrubs are being compared.

#### Investigations relating to quality of meat.

The West Virginia experiments referred to previously, in which the value of a grain supplement in addition to grass is being determined, also show a comparison of grades of steers. The effect of grade or quality of steers and of a grain supplement upon the quality of grass beef are two factors that are being studied in connection with the cooperative project, "A Study of the Factors Influencing the Quality and Palatability of Meat."

The cooperative projects in Missouri, Texas and Arkansas referred to heretofore are also a basis for studying the effect of such factors as breeding and feeding upon the quality of meat.

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#### Personal Notes

A. K. Mackey of the resident teaching staff of the Texas A. & M. College has been doing sheep extension work in that State during the summer.

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O. O. Waggener, Livestock club specialist in Nebraska is reported to have been awarded a 100 lb. bag of flour in a livestock judging contest presided over by President Coolidge at Ardmore, S. D.

## CONTROLLED BREEDING

By B. W. Fairbanks, Livestock Specialist,  
Colorado Agricultural College.

The Western States Extension Conference has convened three times, and through its Range Livestock Committee has formulated plans for the guidance of extension animal husbandmen in the range area. From each conference has come the important recommendation that there should be an increase in the percentage of calf crop. Such a recommendation is in keeping with the trend of modern business, which fully appreciates the important economic principle of mass production.

On a cow ranch it is the calves that are born, raised and marketed, that pay the bills. The calves must pay for the cost of keeping the cows through the year, the interest and depreciation on the investment, the cost of keeping the bulls, the losses from poison and straying, labor and incidental expenses, and in the end they must make a profit for the rancher. It is the percentage of calf crop that very largely spells success or failure in the cattle ranching industry.

Even a casual student of the range cattle business is met with many other problems, however, which clamor for solution. In the first place there are too many "cut backs" in the feeder cattle for sale, due to a lack of uniformity resulting from a high percentage of "off-aged" cattle. Also, the cost of winter feeding is frequently so high that it makes great inroads into the profits. The calf dropped in the winter is a source of worry without a financial reward. Finally, the problem of decreasing the cost of production is ever present.

The Colorado Extension Service has been interested in a project called "Controlled Breeding." Its objects are not different from those recommended by the Western States Extension Conference, but in addition to increasing the calf crop, it also assists in the solution of some of the other existing problems. We define controlled breeding as a method of management for range bulls, which consists of removing the bulls from the herd when they go into winter quarters, and keeping the bulls separated until late spring or early summer. The exact time of returning the bulls will depend upon when it is desired that the calves be dropped.

It is the calf crop that should occupy the first place in our attention, and controlled breeding increases the calf crop, for the bulls are in excellent breeding condition, being strong and vigorous, when they are returned to the herds. It is not surprising that this method of bull management should result in greater uniformity of the feeders sold, for all calves are born at one season of the year. It is also observed that controlled breeding reduces the winter feed

bill. The calves are all dropped in the spring and weaned by fall, so that when the cows go onto winter feed they are dry. Every ranchman knows that a dry cow requires less hay than one with a woolly-haired calf by her side. Controlled breeding solves the winter calf problem, for all calves are born in the spring. When calves are dropped in the spring they are ready for market a year from the following fall. Their cost of production is reduced as they have only one winter feed bill and only one summer grazing fee charged against them.

To determine the value of controlled breeding, the ranchers on the Gherry Creek Allotment of the Montezuma National Forest withheld their bulls from January 1 to June 25. This method gave them a 31 per cent increase in the calf crop. Based on 100 cows, a 31 per cent increase in calf crop obviously means:

Increase in number of calves.....	31
Extra weight as yearlings (700 lbs. average),	21,700 lbs.
Increase of gross receipts (\$7.00 per cwt.),	\$1,519.00

The remuneration from the practice of controlled breeding is demonstrated by the above figures. Applying the figure of 31 per cent to 100 cows, it is noted that the increased pounds for shipping is 21,700 lbs. The minimum weight of car lot shipments on most western railroads is 22,000 pounds. The increase is practically one carload from 100 cows. The increase of gross receipts is \$1,519.00, and the overhead has not been materially increased. Of course, it can not be expected, that this high percentage increase of calf crop will be duplicated in every place where it is tried. An increase, however, is assured and the other conditions incidental to the conduct of the business are improved.

The ranchmen have also mentioned that other advantages obtained from controlled breeding are: (1) That all calves are born in the spring; (2) that the death-losses have been reduced as there are no winter calves; (3) that there is greater uniformity of the feeders marketed; (4) that less hay is required for winter feeding; (5) that the cost of production has been reduced; and (6) that greater gains at less cost have been obtained, as grass is the natural domain of a cow and her calf.

The only way in which one human being can properly attempt to influence another is the encouraging him to think for himself, instead of endeavoring to instil ready-made opinions into his head.

— Sir Leslie Stephen.

## Ohio Exhibits of Commercial Livestock

At the 1926 Ohio State Fair we presented exhibits of commercial livestock, assisted by the Chicago Livestock Exchange. Fifteen lots of cattle and 10 lots of feeder sheep were shown. Five head of cattle constituted a lot, 4 head being in feeder condition and one, fat. The fat one was typical of the feeders shown when ready for market. Each lot represented a different market grade. Choice, good, medium and common grades of yearling and two-year-old steers and choice, good and medium heifers were included. Choice and medium calves, both heifers and steers, completed the cattle exhibit.

Actual prices of these different grades of feeders and fat animals were posted to acquaint interested parties of market values. Representatives of the Chicago Livestock Exchange and the University were present to discuss with farmers the various grades and the way in which the different grades fit into the farmer's feeding operations. Seasons of marketing, feeds, available equipment and probable market prices, were points emphasized in fitting the feeding operations to the individual farm.

The feeder sheep and lambs exhibited consisted of choice, medium and light lambs of the white-faced and black-faced types of western lambs, choice and common ewes, and wethers. Market values and weights were posted and their adaptability to Ohio feed lots discussed.

We also promoted a carlot show of fat yearlings at the State fair. Twenty head made up each entry of which there were seven. The purpose was to show the effects of different rations and cattle originating in different major range sections of the country. South Texas, Panhandle, Sand Hill and Dakota cattle were represented in the entries. This show afforded an excellent opportunity for those interested in feeding calves to see how calves from the different sections appeared when finished for market. These cattle were sold during the Fair to packers at very satisfactory prices.

These exhibits were very favorably received by our farmers and it is planned to repeat them next year with some improvements. In the fat carlot section, for example, we hope to show over each entry a summary of the feeding operations, including ration, gain, costs, etc.

-- From Ohio Animal Husbandry Report--1926.

COLONEL FRED M. WOODS' TRIBUTE TO THE COW

(Delivered as a part of the opening remarks at a cattle sale when Colonel Woods was an active auctioneer).

"Grand and noble brute, of all man's animal friends she is the greatest. To her we owe the most. Examine into all the channels of trade into which she enters, and note the result, should she be blotted out. A Sunday stillness would pervade the great stockyards of our large cities, and grass would grow in the streets. One-half the freight trains that plow the continent from ocean to ocean would sidetrack, for there would be nothing for them to do. Fifty per cent of the employees would draw no pay on Saturday night, and our tables would be bare of the greatest luxuries with which they are now loaded. The great plains of the West that the cow has made to blossom like the rose would revert to the Indians, whence they came, and millions of prosperous homes would be destroyed.

"No other beast is like the cow. There is not a thing from nose to tail but is utilized for the use of man. We use her horns to comb our hair, her skin is on our feet and horses backs. Her hair keeps the plaster on our walls, her hoof makes glue, and her tail makes soup. She gives us our cream, our milk, our butter and cheese, and her flesh is the great meat of all nations. Her blood is used to make our sugar white; her bones when ground make valuable fertilizer, and even the contents of her paunch she has herself put through the first chemical process for the manufacture of the best quality of white board paper. Oh, you who would abuse the cow, I wish that I could for once take from your table as you are about to sit down to the evening meal all that the cow has placed thereon. I'd take the cup of milk, setting by the baby's chair, I'd take the cream biscuit, the custard pie, the cream for coffee, the butter, the cheese, the smoking roast of beef or steak or the sweet corned plate of juicy meat. In fact, I'd leave you to make your meal upon Irish potatoes, beet pickles and tooth-picks.

"No other animal works for man both day and night; by day she gathers food, and when we are asleep at night she brings it back to rechew and manufacture into all the things of which I speak. She has gone with man from Plymouth Rock to the setting sun. It was her sons that drew the prairie schooner for the sturdy pioneer, as, inch by inch, they fought to prove that 'Westward the star of empire takes its way'. The old cow grazed along behind, and when the day's march was done she came and gave the milk to fill the mother's breast to feed the suckling babe that was, perchance, to become the future ruler of his country.

"Who says that what we are to a great extent we do not owe

to man's best friend. the cow? Treat her kindly, gently, for without her - words fail me to describe.

"It was the cow that made it possible for man to change the great American desert into a land of happy and prosperous homes. When she came, the buffalo disappeared, the Indian tepee gave way to the church, schoolhouse and home, and where once the wild wolves howled, today children prattle, grass grows, flowers bloom and birds sing."

#### Ox Warble Fly Control

More than one month of the year was spent in Burkes Garden, Tazewell County, in ox warble control work. This work was done from January to June and consisted in organizing the cattle owners in a cooperative effort to reduce the damage done by the ox warble or heel fly. More than forty cattlemen, owning more than 2500 head of cattle, in fact all the cattlemen in Burkes Garden, cooperated in the work. Seven chutes were built for handling the cattle and the cattle were taken up and treated for the most part, five times, approximately 30 days apart. The treatment consisted in removing the grubs from the cattle's backs or injecting benzol into the hole where the grub had penetrated the skin. The two methods were generally practiced on every lot.

As a result of the work done the owners thought that the cattle wintered better and that milk cows produced more milk. The most noticeable benefit derived however was during the grazing season when it was estimated that cattle were disturbed 75 per cent less than usual, due to the decreased number of flies.

The project will be repeated this coming year and if results expected materialize other sections of the State no doubt will want to start similar work.

---From Virginia Animal Husbandry Report-1926.

## RANGE CATTLE WORK IN IDAHO

By E. E. Rinehart,  
Field Animal Husbandman,  
Idaho Extension Service.

Beef cattle production in Idaho is complete, consisting of the range industry, the purebred industry and the feeding industry. Each is a separate and distinct business, differing in location, problems and interests. The range cattle ranches are mostly located near the range. During the spring, summer and fall the cattle may be more than a hundred miles from the farming districts. The purebred cattle ranches are located more generally in the farming areas and the cattle feeding industry is conducted mostly by irrigation farmers as a means of furnishing a market for the surplus feed crops.

Extension work in these fields was started fourteen years ago. The projects dealing with it are subdivided to conform to the branches of the industry set forth.

Present projects with range cattle are continuous, extending over a period of from two to nine years. They were originally started to ascertain the problems pertaining to this industry, such as the cost of production, the value of the different methods of management, the feasibility of small units held in cooperative herds, and a study of the marketing problems. They have been long and somewhat slow, due in a large measure to the fact that available information including experimental data was meager. The active projects now include the following:

- A study of production costs
- Profitable methods of management
- Increase of the calf crop
- Reduction of losses
- Marketing

Two projects closely allied but not regarded or carried on as extension projects are conservation of the range and disease control.

### Production Costs

This project is now being extended to an economic survey of one of the big cattle sections of the State. It was originally started with a few outfits that kept careful records. The main value has been the gathering of information for use in the management project. A study of the results offered but few encouraging suggestions for producing cattle at a lower cost. If the present costs are reduced the returns are lessened. If good winter feeding

is not practiced the size of the cattle is not maintained. If herding is not done the range is damaged and the summer losses of the cattle increased. The only opportunity for the reduction of expenses has been in the management of the home ranch so that sufficient feed may be available for fall pasture and winter feed at actual production costs, and, further cooperation in association riding in order that the herding charges may be reduced. Generally, however, the production costs over the last seven years have shown a necessity for the securing of greater returns through the saving of a high percentage of calves and the marketing of a better grade of cattle.

#### Profitable Methods of Management

This project was undertaken as a demonstration in order to learn the problems and ascertain the value of the different methods of management. While many desirable practices have been proved on the home ranch, the spring range, the summer range in the Forests and the fall range or pasture, two questions are not yet satisfactorily answered. One is the question of a definite calving season. In some sections the results show clearly that this is desirable but in a few cases the results indicate there may be some advantage in having the bulls with the cows throughout the year. This custom has the disadvantage of a continuous calving season and an impossibility of the close culling of the shy and non-breeders and results in the production of an uneven crop of calves. However, some results show that a higher percentage of cows may calve and in a small outfit, a higher percentage may be marketed.

Another phase with conflicting results is the keeping of the heifers from the breeding herd until the summer they are two years old. This, of course, can be done only in large outfits or in sections where there is good cooperation so that all the yearling heifers from the different outfits can be handled on one range by an association herder.

#### Increasing the Calf Crop

The figures on the calf crop have varied greatly. Where carefully checked with big cooperating outfits it was found in one year to vary from 48 to 83 per cent. Records kept on more than 12,000 cows for a 5-year period showed a variation within the 5 years of from 57 to 76 per cent with a 5 year average of 70.3 per cent. In all cases there were more calves born than the branding count showed but no practical way has yet been worked out to save all the calves born in a cow herd kept in the open. The calving percentage has been increased by the providing of sufficient bulls of proper age, the proper distribution of the bulls on the summer range, proper feeding



of the cows and bulls, the use of good range during the breeding season, the elimination of the shy and the non-breeders and the providing of a sheltered range or sheltered corrals for calving time.

The culling of the shy breeders before calving time has taken care of the disposal of the surplus. While the general custom has been to dispose of all the cattle of one age, such as the yearling or 2-year-old heifers, or, all the aged cows, the plan now followed is to ride through the herds in the early spring and cut out the cows that do not show signs of calving. These are fattened for market either in the feed lots or on the early spring range. Incidentally it may be stated that mistakes are often made, either way, but those that have been deceptive are put back into the breeding herd again with no harm done.

This project has taken care of the culling. It has prevented culling on type, a project that has been contemplated for some time but has not yet been possible. In many cases the cutting out of the dry cows has meant so much reduction that the more likely and "breedy" looking cows are not shipped as beef but held back and given another chance.

#### Reduction of Losses

This project has been difficult and but little progress has been made. Losses in herds where records have been kept have varied. Yearly losses of ten per cent are not uncommon and an average of 6 to 7 per cent is not high though on a few ranges they are held below 3 per cent. The greatest losses occur in the breeding herd.

One of the first steps is the eliminating of poisonous plants. Selling cows before they get too old and the proper cooperation of all riders in turning back straying cattle and an investigation of suspicious trails on the range are important factors.

#### Marketing Problems

Opinions from Eastern and Middle Western markets and from experiment stations and feeders in the Corn Belt where young cattle are in demand have given rise to questions as to the age at which to market cattle. Opinions of the range-men differ. Some think that the day will come when calves will sell at a sufficient premium to justify selling them. Others are of the opinion that the range country with the vast areas of open and restricted ranges and abundant rough winter feed will continue to produce older cattle. This has given rise to a demand for more definite information on the subject.

Records of the costs show that the greatest problem has been

the maintenance of the breeding herd and the production of the calves to weaning time. If the calves were sold then it meant a loss. If run for two years they could be sold at a profit. This has given rise to a desire to sell out the breeding herd and each year purchase weaner calves or yearling steers and grow them out.

In two outfits where the cattle were brought home early with the calves still carrying the milk fat they have been weaned on grain and sold at a premium to Corn Belt feeders. This has been profitable but has been a means of disposing of only one-third of the calves. The other two-thirds, for some reason, possibly from that fact that their dams were not heavy milkers or that the tendency of calves on the range is to grow rather than fatten, were too thin to command the premium, hence were held back and sold as yearlings or 2-year-olds.

In one outfit where all the steers were sold the results were as follows:

	<u>Weight per head</u>	<u>Selling price per head</u>	<u>Selling price per cwt.</u>
Steer calves	515	\$33.47	\$ 6.50
Yearling steers	732	47.58	6.50
2-year-old steers	961	62.46	6.50
3-year-old steers	1202	84.14	7.00

Weights of 7867 head of steers off the Idaho ranges last fall varied as follows:

	<u>Minimum weight</u>	<u>Maximum weight</u>	<u>Average weight</u>
Calves	353	561	423
Yearlings	628	746	701
2-year-olds	883	998	942
3-year-olds	1073	1287	1178

The range cattle projects, work with the purebred associations and the feeder cattle information service are state-wide projects. They are carried on with the assistance of the county agents in so far as the work applies to the individual counties. The projects that apply to the farms, such as the purebred herds and the winter feeding demonstrations are county agent projects, outlined and carried on by them with such help from the specialist as may be requested.

Success or failure is caused more by mental attitude even than mental capacities.

— Walter Dill Scott.

## THE DRIVING POWER OF HUMAN INSTINCTS

Directly or indirectly the instincts are the prime movers of all human activity; by the conative or impulsive force of some instinct (or of some habit derived from an instinct), every train of thought, however cold and passionless it may seem, is borne along toward its end, and every bodily activity is initiated and sustained. The instinctive impulses determine the ends of all activities and supply the driving power by which all mental activities are sustained; and all the complex intellectual apparatus of the most highly developed mind is but a means toward these ends, is but the instrument by which these impulses seek their satisfactions, while pleasure and pain do but serve to guide them in their choice of the means.

Take away these instinctive dispositions with their powerful impulses, and the organism would become incapable of activity of any kind; it would lie inert and motionless like a wonderful clockwork whose main-spring had been removed or a steam engine whose fires had been drawn. These impulses are the mental forces that maintain and shape all the life of individuals and societies, and in them we are confronted with the central mystery of life and mind and will.

--William McDougall in "Social Psychology."

### TWO SEASONS' WORK IN CULLING TO INCREASE FLEECE WEIGHTS

by

D. J. Robertson, Livestock Specialist  
Wyoming College of Agriculture.

Wool improvement work by means of culling by fleece weighing demonstration was started in Wyoming at the beginning of the 1926 shearing season. Figures for the second year have just been secured and summarized. In 1926 three cooperators were secured, one each in Sheridan, Natrona and Uinta Counties. Work with the band in Sheridan County had to be discontinued after the first year, due to the owner selling out. To make up for the loss of this cooperator two new bands were added in 1927, one in Big Horn and one in Park County making a total of four demonstrations now being carried on. Requests for the work were also received from Albany, Lincoln, Johnson and Hot Springs Counties but because of possible conflicts in shearing dates, it was felt that it was not advisable to spread out too far. It is possible that in 1928 the project may be carried into other counties providing suitable cooperators can be secured.

The following numerical record shows the comparative fleece weights for the years 1926 and 1927 on the D. N. Speas clip at Casper, Wyoming.

	<u>1926</u>	<u>1927</u>
Shearing Dates	May 29 to June 3	May 30 to June 4
Shearing done by hand	7 shearers	8 shearers
Shearing price	15¢ per ewe, 30¢ per ram	15¢ per ewe, 30¢ per ram
Total number sheep shorn	3537	2665
Total weight of wool (lbs.)	23,027.5	25,113.0
Average fleece weight(all fleeces)	9.07 lbs.	9.42 lbs.
Number of sacks of wool	61	66
Sale price of wool per lb.	35 1/4¢	30 1/2¢

	EWES		YEARBLINGS		WETHERS	
	1926	1927	1926	1927	1926	1927
Number shorn	1,899	1,984	611	662	27	19
Culling standard on light fleeces (lbs.)	7.0	7.5	5.5	6	--	--
Culling standard on short fleeces (lbs.)	7.5	8.0	6	--	--	--
Number culled account light fleeces	133	121	76	100	--	--
Number culled account short fleeces	95	60	23	15	--	--
Total number culled	228	181	99	115	--	--
Total weight of all fleeces (lbs.)	18,449.7	20,056.5	4251.6	4829.8	326.2	226.7
Total weight of unculted fleeces (lbs.)	16,906.0	18,740.6	3753	4196.9	--	--
Total weight of culled fleeces (lbs.)	1,543.7	1,315.9	498.6	632.9	--	--
Percentage culled acct. light fleeces --						
and short fleeces	12	9.1	16.2	17.3	--	--
Percentage culled acct. light fleeces	7	6.1	12.4	15.1	--	--
Percentage culled acct. short fleeces	5	3.0	3.7	2.2	--	--
Average weight of all fleeces (lbs.)	9.7	10.1	6.95	7.3	12.1	11.9
Average weight of fleeces above standard (lbs.)	10.2	10.4	7.3	7.67	--	--
Average weight of fleeces below standard "	6.8	6.7	5.03	5.5	--	--
Weight of heaviest fleece (lbs.)	17.3	16.8	11	12	17	15
Weight of lightest fleece (lbs.)	3.1	4.5	3.2	4	8.2	9.4
Actual Shrinkage (%)	--	--	59.4	--	--	--
Sheep shearing 17 lbs. and under 13 lbs.	2	0	0	0	1	0
" " 16 lbs. " " 17 lbs.	2	1	0	0	0	0
" " 15 lbs. " " 16 "	5	8	0	0	1	1
" " 14 lbs. " " 15 "	24	31	0	0	4	1
" " 13 lbs. " " 14 "	53	85	0	0	0	3
" " 12 lbs. " " 13 "	140	161	0	1	10	5
" " 11 lbs. " " 12 "	230	318	1	1	3	6
" " 10 lbs. " " 11 "	371	506	10	10	5	1
" " 9 lbs. " " 10 "	424	452	40	59	2	2
" " 8 lbs. " " 9 "	363	247	97	142	1	0
" " 7 lbs. " " 8 "	187	119	153	196	0	0
" " 6 lbs. " " 7 "	64	29	203	163	0	0
" " 5 lbs. " " 6 "	29	4	77	73	0	0
" " 4 lbs. " " 5 "	4	3	23	17	0	0
" " 3 lbs. " " 4 "	1	0	7	0	0	0

## BIG TEAMS IN NEBRASKA

On March 25, 1920, big hitch work was introduced into Nebraska through a multiple hitch demonstration near Eddyville in Dawson County. At that time we used the six horse tandem plot hitch, actually getting one or two farmers interested to the degree that they built hitches. Five years later we visited this same community in company with the county agent who helped stage the original demonstration. We found that during those five years the six horse tandem hitch had become quite generally accepted throughout the whole community.

The five years, 1921 to 1925, were, economically and psychologically speaking the worst years Nebraska has ever had so far as horse promotion work was concerned. During this period many of our farmers suddenly found themselves making great financial sacrifices in their eagerness to support new-found friends, of which they knew little but which were supposed to furnish power more efficiently than it had ever before been produced. So many of them turned out their faithful horses and bought, (often on the installment plan), iron horses to take their places. Time has passed. Cheap horses have saved the day. Luckily even the most enthusiastic motor fancier was very reluctant to sell his horses at prevailing low prices. Even though few or no colts were raised the horses lived, and on many farms they are now old but are really appreciated. They are still low in price but they are not for sale.

In 1924 the work began to turn. More and more inquiries about horse power were received. As a sort of an experiment at the 1925 Northwest Farmers Congress at Chadron, a big team discussion was presented and the interest was so keenly manifested that we resolved to start some big team promotion work on a rather extensive scale just as soon as other projects under way could be put on a more self-propelling basis which would allow us time to start an additional line of work.

The opportunity to get under way with big team hitch demonstrations came in September, 1926. In cooperation with the Horse Association of America we staged 18 practical hitch demonstrations from September 13 to October 12 with great success. We demonstrated three times in the rain. The sun shone on only three days but when all was said and done the attendance averaged 61 for each demonstration.

### A Typical Demonstration

About four weeks in advance arrangements were made to hold a big team hitch demonstration on the Paschke ranch northwest of Alliance. As this county has no county agent it was necessary to advertise and plan the whole thing through a private agency. The largest hardware dealer and harness manufacturer in western Nebraska

was interested and he made all arrangements even to seeing that material was assembled from which an equalized hitch could be built. He was furnished with a supply of attractive posters which were displayed throughout the county.

We arrived at the Paschke ranch a day before the demonstration was to be staged and built a 10-horse tandem hitch and lined up and put into working order various machines common to that territory to be used during the demonstration.

The demonstration was advertised to start at 2 p.m. During the morning we hitched several different teams and thoroughly acquainted Mr. Paschke's teamsters with them. After an early dinner two teams were put to work in the field, — a 10-horse tandem on two gang plows tied one behind the other and a 6-horse tandem on an ordinary gang plow.

As the people arrived to see the demonstration they were surprised to see just ordinary fellows whom they knew, driving big outfits with perfect ease. When the crowd assembled the teams were stopped and everything was carefully and completely explained.

About 3 p.m. the horses were taken from the plows and various disc, drill and fallowing machinery hitches were made.

We stayed in the background as much as possible making it a matter of one neighbor demonstrating to another. Needless to say it "took."

#### Important Do's and Don'ts

1. Do not expect a farmer to visualize a disc hitch where in a demonstration the horses are hitched to a sled or a log. Use machinery which the farmer uses.
2. Start with small hitches and always let a local farmer do the driving.
3. To show the principle of "tying in" and "bucking back" use just one horse at first then state the fact that all individual horses in a team are hitched approximately the same.
4. Be careful. Use a buck rope on every horse other than the leaders. Tie every horse in. Accidents are avoidable. Avoid them. One accident will queer a whole community for years.
5. Get the name and address of every man who attends the demonstrations and get in touch with them from time to time.

It can probably be truthfully said that the average farmer

is a little leary of big teams, possibly because at some time in his life he has tried to drive ten horses with eight lines and was lucky to live to tell of the experience. A big team, the same as a big engine, must be carefully adjusted and certain means of control are necessary. The fact that a big outfit can be safely handled with two lines, and that mean horses can be used in them without in any way affecting the team as a whole, are the strongest arguments to use when trying to convert a skeptic.

#### Publicity

During the coming year we propose to do considerable hitch demonstration work. Our plan is to precede the demonstrations with a number of snappy stories in favor of horses, not against motors. We are shaping all of our propaganda in favor of horse power and we do not feel that the economy of horse power needs defending by attempting to compare it with other types of power. We will also use the radio quite extensively in advertising meetings.

—From Nebraska Animal Husbandry Report, 1926.

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#### I've Never Seen a Cow

I live upon a New York street,  
Near where the "L" and "Cross-town" meet;  
It's not so bad; we have a tree;  
And when the wind blows from the sea;  
We smell the salt—but I'll allow  
I never yet have seen a cow.

I've seen the lions in the Zoo,  
The tigers, camels, zebras, too;  
And other beasts from over-seas  
I see as often as I please;  
It's queer, I think, but yet, somehow,  
I've never, never seen a cow.

Of course, I know just how they look;  
I've seen their pictures in a book.  
They're black or white or brown or red,  
With curving horns upon their head;  
And Ma describes them, anyhow—  
When she was young, she knew a cow.

I'd like to live on a farm, I think,  
And have a cow's fresh milk to drink;  
If we were poor, I'd go to Fresh Air,  
Or rich, we'd spend the summer there;  
But we're just middling. Yet somehow,  
Some day, I'm going to see a cow.

—Anna L. Curtis.

## POISONING WOLVES

By George W. Barnes,  
Beef Cattle Husbandman,  
Texas Extension Service.

While poisoning wolves does not seem an inviting undertaking the county agent, R. S. Miller, of Presidio, Jeff Davis and Brewster Counties, Texas, adopted this method of ridding the ranches of wolves which cause a great loss to calves, sheep and goats. During the last six months fifty thousand poisoned baits were distributed over the range area. The greatest number of dead wolves found on one ranch was 218. This ranch had more level land and the dead wolves were easier to find.

This work was started in a small way during 1926, first on the ranches of Rowdy, Love, Stevenson, McClean and D. C. Cleveland. These ranchmen were induced by the county agent to take a certain number of baits to determine what result would be secured and make sure that the kill would be noticeable and if such an undertaking would be worth while if made tri-county wide. These men signed up for a given number of baits, and C. R. Landon, leader of Predatory Animal Control, was invited to take part. The ranchmen came and mixed their own baits according to directions, and enlisted the cooperation of a few neighbors until more than 11,000 baits were distributed. These first 11,000 baits were placed over a range of approximately 400,000 acres.

The poisoned baits consisted of fifty per cent processed strychnine on fresh fat pork, and were sold to ranchmen at the low price of one and one-fourth cents a bait. The baits were put along trails, old roads, watering places and near dead carcasses. Some ranchmen used drags and reported fine results. Reports from ranchmen on these 11,000 baits showed that approximately 300 coyotes were killed. The best results seemed to be obtained where the poisoned baits were used in large quantities.

Preparations were then made to enlist the three counties and put on a more extensive campaign. Petitions were circulated by ranchmen asking everybody to sign up for the number of baits desired. These resulted in ranchmen taking 40,000 baits. These baits were put out during February and March. To expect to find all the wolves killed would be unwarranted optimism, but the ranchmen are more than pleased with the success of the undertaking. Many ranchmen stated that they had not seen a wolf since the baits were put out.

During May the writer spent three weeks in those counties with the county agent. We visited many ranches and covered many miles of country off the main highways and we did not see a live wolf.



### A City Editor's Editorial on the Cow

The cow is a female quadruped with an alto voice and a countenance in which there is no guile. She collaborates with the pump in the production of a liquid called milk, provides the filler for hash, and at last is skinned by those she has benefited, as mortals commonly are.

The young cow is called a calf, and is used in the manufacture of chicken salad.

The cow's tail is mounted aft and has a universal joint. It is used to disturb marauding flies, and the tassel on the end has unique educational value. Persons who milk cows and come often in contact with the tassel have vocabularies of peculiar and impressive force.

The cow has two stomachs. The one on the ground floor is used as a warehouse and has no other function. When this one is filled the cow retires to a quiet place where her ill manners will occasion no comment and devotes herself to belching. The raw material thus conveyed for the second time to the interior of her face is pulverized and delivered to the auxiliary stomach, where it is converted into cow.

The cow has no upper plate. All of her teeth are parked in the lower part of her face. This arrangement was perfected by an efficiency expert to keep her from gumming things up. As a result she bites up and gums down.

The male cow is called a bull and is lassoed along the Colorado, fought south of the Rio Grande and shot in the vicinity of the Potamac.

A slice of cow is worth 8 cents in the cow, 14 cents in the hands of packers and \$2.40 in a restaurant that specializes in atmosphere.

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Knowledge is essential to conquest; only according to our ignorance are we helpless. Thought creates character. Character can dominate conditions. Will creates circumstances and environment.

--- Anne Besant.

## CONSERVATION OF HIDES AND SKINS

By R. W. Frey, Associate Chemist,  
Leather and Tanning Investigations,  
Bureau of Chemistry and Soils,  
U. S. Department of Agriculture.

Those familiar with the hide and leather industry become deeply impressed, early in their acquaintanceship, with the great waste in the aggregate that occurs particularly in hides and skins, and realize that there are several sound economic reasons why the utmost conservation of these materials should be practiced.

Unlike most industries the leather industry is dependent for its supply of its basic raw material upon a by-product of another entirely distinct industry, that of meat production. Consequently the leather industry can not increase at will the number of hides and skins. Its greatest hope lies in conservation, in the prevention of the waste or deterioration of every possible pound of hide substance and in striving to have every hide and skin reach the tanner in a sound, unblemished condition.

Because of the magnitude of the industry the great values at stake offer also the incentive of a material return in dollars and cents for all investments in waste-elimination. Our present dependence upon foreign sources is another reason, and an important one, for our objective — conservation.

We tan in this country each year about \$300,000,000 worth of hides and skins into leather having a value at the tannery of about \$550,000,000. which, when converted into finished leather articles for our everyday needs have a value of \$1,500,000,000. To meet these leather requirements it is necessary under present conditions to import approximately one-half of the hides and skins used. Obviously benefits will accrue to each of us from any measures that will make our domestic supply of hides and skins go further in meeting these requirements, and from every added pound of sound hide and the resulting gain in better and longer lasting leathers.

Waste in hides and skins results from many causes, some man-made; others made by the natural enemies of man and animal. Among the latter causes an outstanding one in the measure of dollars and cents is "grubs", a damage principally to cattle hides, in the form of holes that entirely penetrate the hide, and thus reduce its potential yield of sound leather. Grubby hides and skins are caused by

punctures by larvae developed from eggs laid on the hairs of the animal by the warble-fly, known also as the heel-fly. Cattlemen, dairymen, and tanners should join hands most heartily in a war on the warble fly. Stock infested with grubs are not healthy. They yield less milk and less meat as well as less leather. It has been estimated by various authorities that the losses caused by the warble-fly are between \$50,000,000. and \$100,000,000. a year. The solution of the problem has received much study and remedial measures are available. There remains now only a united effort by all to remove this evil. An excellent object lesson in the possibilities of such an effort is afforded by the progress made in overcoming the cattle tick.

A loss in leather of real magnitude in the aggregate is brought about by branding cattle and calves. Branding under present range conditions is probably a necessary evil for which no satisfactory substitute has been proposed. Nevertheless, our aggregate yield of serviceable leather can be increased many pounds by more judicious designing and more discretionary use of brands. Brands should be limited to a feasible maximum size. There seems little excuse for a brand running from hip to shoulder and a side so branded is worthless for making into certain kinds of leather. Discretion as to the section of the hide branded would add to our available supply of leather. Different sections of the same hide yield leather of different quality. The best leather comes from the butt and back areas. Whenever a brand is run in some other section of the hide our supply of leather is increased.

Among other causes of waste in hides and skins occurring during the life of the stock are diseases, manges, wire cuts, brush scratches, prod marks, and rough handling, especially during shipment.

A loss in cattle hides and calf skins, estimated by some at about \$20,000,000. a year, results from the manner in which hides and skins are handled at and after slaughter, particularly with respect to skinning, curing, and marketing.

The most serious defects from faulty skinning are cuts and poor pattern. Cuts by the inexperienced and small operators probably come the nearest of all to being an excusable loss. To completely avoid them requires experience, and skill, or the use of mechanical safety devices. However, an appreciation of their seriousness from a leather-making standpoint, patience, and a will to do can help greatly in reducing this loss.

Poor pattern results from lack of knowledge as distinct from lack of skill and consequently can be more readily overcome. The producer should realize that if the "opening up" cuts are made at the wrong places and in the wrong direction, a hide of irregular shape and improper distribution of butt, belly, shoulder, and shank portions results. This is of importance because these different parts of the

hide have different fiber quality and consequently yield leather of different value. If the take-off is such that the proper proportional division of the resulting leather can not be made, the maximum utility of that particular hide has not been obtained.

Curing is a vital step in the production of leather. Sound leather can not possibly be made from unsound hides. Poor curing results primarily from indifference, ignorance, and repeated handling, consequently its elimination should be entirely feasible. The most serious defects of poor curing are rot, hair-slip, salt stains, false weighting, poor fiber from repeated freezing and thawing, and vermin damage. The remedy is the prompt, liberal, and thorough application of clean salt. A piece of fresh hide will spoil like so much fresh meat; thoroughly salted it will keep. Where salt is not available and the climate is hot and dry, hides may be preserved by prompt and thorough air-drying.

The manner in which hides and skins are marketed is an important factor in our supply of them. Repeated handling and delay in their movement cause serious deterioration and a lower return to the immediate producer. The more directly a hide passes from the producer to the tanner the better.

The maximum conservation of our domestic supply of hides and skins is a subject with many complexities. First of all, many distinct interests are involved among whom there is a lack of understanding and appreciation of the problems and responsibilities of each. To many producers a hide is a hide, from which just so much leather can be made. Little do they realize the influence, in both quantity and quality production of leather, of defective hides and skins with their cuts, brands, grub-holes, poor fiber from poor curing, and so on. Failure to more fully appreciate the consequences of such defective raw material is one of the reasons why many producers can not see the ever-existing indirect incentive for better work in the form of a return to them in more leather and better leather.

A direct incentive in the form of more money to the immediate producer for better hides and skins is more effective. This is seldom realized at present by the small producer of that general class of hides and skins known as "country", primarily because of the evil of "flat" buying, which should and must be done away with. A good hide should bring to the producer a better price than a poor one. The tanner will pay a better price for better hides. It is his problem to see that a share of this increased return is received by the immediate producer.

Even though trading by quality be established in the marketing

of "country" hides and skins the small producer must realize that he can not receive returns on a par with those of large scale operations, such as in "packer" killing, because of the necessary items of expense incurred between him and the tanner, in the collecting of small lots at some central agency where the hides and skins can be graded and sorted into lots sufficiently large to interest the tanner.

A significant advance in tackling this problem of hide and skin conservation was made about a year ago when the Secretary of Agriculture and the Secretary of Commerce met in conference with representatives of the farming, dairying, cattle-raising, and hide and leather industries. The economic importance of the subject was presented, the problems of the several groups were discussed, and a program of work was outlined. The outcome of this move was the development of a helpful get-together and work-together spirit between the interests of the several industries and the departments and the creation of an Agriculture-Commerce interdepartmental committee on the conservation of hides and skins, composed of representatives of the various bureaus of the two Departments whose activities touch upon the problem. This committee has in turn set up sub-committees each to study and work with the industries on some one phase of the problem. Work is already under way on the defining and establishing of grades of hides and skins, particularly of "country" origin; on the plans of a large scale demonstration of the possibilities of eradicating the warble-fly; and on demonstrating correct methods of skinning and curing and devising means of reducing cuts and scores. As the facilities of this committee are increased it is planned not only to expand the work on the phases of the problem just mentioned but also to include work on other important factors such as branding, marketing, and collecting of pertinent statistics.

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"When mighty roast beef was the Englishman's  
food  
In ennobled our hearts and enriched our  
blood;  
Our soldiers were brave and our courtiers  
good  
Oh, the roast-beef of old England;  
And, oh, the English roast-beef!"

## PORTABLE EXHIBITS

The Bureau of Animal Industry has a number of educational exhibits that are available to livestock extension workers on a loan basis, provided the borrower assumes the costs of transportation in both directions, and promises to exercise reasonable care to protect them against damage while in their charge. Most of these exhibits are of the folding panel type and suitable for use at county fairs, livestock meetings, etc.

Some of the titles and brief descriptions are listed below for the information of those interested. Inquiries regarding them should be addressed to the Bureau of Animal Industry, U. S. Department of Agriculture, Washington, D. C.

"Two Steers on the Same Trail" -- A comparison between common and well-bred steers from range to market -- 5 panels, 4 of which are 3'4" x 3'4" and one 3'4" x 6' -- shipping weight about 165 lbs.

"Stomach Worms of Sheep" -- Method of control -- 3 panels, each 2'4" x 3'4" and drop board.

"Roundworms in Swine" -- Control of internal parasites of pigs -- 3 bromide charts mounted on canvas with rollers.

"Better Breeding - Better Feeding" -- Concrete suggestions as to the value of improved breeding and feeding practices -- 6 panels and 2 drop boards -- over all length 10 ft. -- shipping weight about 95 lbs.

"Better Sires - Better Stock" -- Emphasizing the benefits of using purebred sires -- 3 panels and drop board -- shipping weight about 65 lbs.

"Know Good Beef" -- Portraying factors that contribute to good beef -- 5 separate canvasses carrying legends and pictures, each 40 inches high and with a total length of 31 ft. -- shipping weight 80 lbs.

"Hog Cholera Control" -- 3 panels each 2'4" x 3'4" and drop board.

In addition to the foregoing there is a series of larger exhibits on the following subjects -- Blackleg Prevention, Stomach Worms in Sheep, Roundworms in Pigs, Disinfection and Tick Eradication. These on the average weigh about 400 lbs., are 6 ft. high and when set up occupy a floor space of 13'6" x 4'.

## SOME RECENT STATE PUBLICATIONS

Producing and Feeding Beef Calves by Garlock and Burch --  
Missouri Extension Circular No. 186.

A Technical Study of the Digestibility of Corn Stover  
Silage for Beef Cows by Hamilton and Ruck -- Illinois Experiment  
Station Bulletin No. 241.

Beef Cattle Feeding Trials, 1921-24 by C. E. Howell --  
California Experiment Station Bulletin No. 421.

Poughages for Fattening Two-Year-Old Steers by Edward,  
Gilbertson and Hammond -- Iowa Experiment Station Leaflet No. 23.

Finishing Calves, Yearlings and Two-Year-Old Steers by  
Gilbertson, Edward and Hammond -- Iowa Experiment Station Leaflet  
No. 22.

Type in Beef Calves by Fred S. Hultz -- Wyoming Experiment  
Station Bulletin No. 153.

Feeding and Marketing of Early Spring Pigs on Indiana Farms  
by Lloyd and Young -- Purdue Experiment Station Bulletin No. 310.

Some Statistical Characterizations of the Hog Market by  
Knute Bjorka -- Iowa Experiment Station Research Bulletin No. 102.

Adjusting Hog Production to Market Demand by F. F. Elliott --  
Illinois Experiment Station Bulletin No. 293.

Corn and Hogs Vs. Cotton for Profit by W. W. Shay -- North  
Carolina Extension Folder No. 26.

Wool Production in California by J. E. Wilson -- California  
Extension Circular No. 12.

Multiple Horse Hitches for 4, 5, 6, 8 and 10 Horses by  
Snyder and Collins -- Iowa Extension Bulletin No. 140.

Soybean Hay and Sweet Clover Pasture for Growing Purebred  
Draft Fillies by Edwards and Crawford -- Illinois Experiment Sta-  
tion Bulletin No. 292.